

QPL 14 ANTI-STRIPPING ADDITIVES

SECTION A. LIQUID ADDITIVES

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for anti-stripping additives used to prevent stripping of asphalt cement from aggregates in asphalt mixes.

SPECIFICATIONS

TDOT 921.06 Section B Sub-Section 1

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a sample of the product being tested must be submitted to the Division of Materials and Tests

In house testing consists of 10-min boil test using materials of limestone, gravel, and slag. Material shall be a course aggregate passing 5/8 sieve and retained on no. 4 sieve.

Dry 500 grams of course aggregate. Weigh 100 grams of course aggregate into three 400 ml beakers and place in oven for 30 minutes at 300 plus or minus 10 degrees F. Place a quart can, approximately $\frac{3}{4}$ full of hot asphalt cement into oven for 30 minutes at 300 plus or minus degrees F. Using 3 smaller containers, place the following amounts of anti-strip, 0 grams, 0.3 grams and 0.5grams in the containers and add asphalt to arrive at a total of 100 grams, stir thoroughly and place back in oven for 30 minutes to insure proper temperature at this time. Place a container of approximately 100 grams of asphalt cement with no anti-strip to be used as a control sample. This will now yield us 3 containers with 0%, 0.3% and 0.5% anti-strip additives. At this time get one beaker containing 100 grams of hot aggregate, add 5 grams of asphalt cement containing 0% anti-strip additive and stir thoroughly to insure all aggregate particles are completely covered. Pour out the coated aggregate particles onto a piece of wax paper and allow to cool to room temperature. Place the coated particles with the wax paper into a beaker of boiling water. (a 600 ml. Beaker is recommended). Remove the wax paper with tongs and allow the coated particles to remain in the boiling water for 10 minutes. After 10 minutes pour off the water and place the coated aggregate particles on a piece of cardboard to cool. Repeat the above procedure for the remaining containers containing the 0.3% and 0.5% anti-strip additive. The final results must show at least 95 % coverage for approval.

SECTION B: POWDER ADDITIVES

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for anti-stripping additives used to prevent stripping of asphalt cement from aggregates in asphalt mixes.

SPECIFICATIONS

TDOT 921.06 Section B Sub-Section 1

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a sample of the product being tested must be submitted to the Division of Materials and Tests

In house testing consists of 10-min boil test using materials of limestone, gravel, and slag. Material shall be a course aggregate passing 5/8 sieve and retained on no. 4 sieve.

Dry 500 grams of course aggregate. Weigh 100 grams of course aggregate into three 400 ml beakers and place in oven for 30 minutes at 300 plus or minus 10 degrees F. Place a quart can, approximately $\frac{3}{4}$ full of hot asphalt cement into oven for 30 minutes at 300 plus or minus degrees F. Using 3 smaller containers, place the following amounts of anti-strip, 0 grams, 0.3 grams and 0.5grams in the containers and add asphalt to arrive at a total of 100 grams, stir thoroughly and place back in oven for 30 minutes to insure proper temperature at this time. Place a container of approximately 100 grams of asphalt cement with no anti-strip to be used as a control sample. This will now yield us 3 containers with 0%, 0.3% and 0.5% anti-strip additives. At this time get one beaker containing 100 grams of hot aggregate, add 5 grams of asphalt cement containing 0% anti-strip additive and stir thoroughly to insure all aggregate particles are completely covered. Pour out the coated aggregate particles onto a piece of wax paper and allow to cool to room temperature. Place the coated particles with the wax paper into a beaker of boiling water. (a 600 ml. Beaker is recommended). Remove the wax paper with tongs and allow the coated particles to remain in the boiling water for 10 minutes. After 10 minutes pour off the water and place the coated aggregate particles on a piece of cardboard to cool. Repeat the above procedure for the remaining containers containing the 0.3% and 0.5% anti-strip additive. The final results must show at least 95 % coverage for approval.

SECTION C: FIBER ADDITIVES

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for slag wool or cellulose fiber additive to increase durability and prevent drain down in hot mix asphalt (HMA) mixtures.

SPECIFICATIONS

None

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, product data information and a 1 pound sample of the product being tested must be submitted to the Division of Materials and Tests.

In house testing consists of 10-min boil test using materials of limestone, gravel, and slag. Material shall be a course aggregate passing 5/8 sieve and retained on no. 4 sieve.

Mix and prepare laboratory specimens of open-graded friction course (OGFC) in accordance with AASHTO T 305. Specimens should meet all requirements listed for OGFC aggregate blends in SP411 OGFC. At least one specimen shall be prepared with no fiber additive, and a second minimum of one specimen shall be prepared with the fiber additive. Cellulose fiber additives shall be added at a rate of 0.3% by weight of total mixture, and slag wool fiber additives shall be added at a rate of 0.4% by weight of total mixture. Complete the drain down test procedure as presented in AASHTO T 305. The final results must show that mixtures with additive exhibit less than 0.3% drain down.